

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Carrier Current Systems Including Broadband	)	ET Docket No. 03-104
Over Power Line Systems	)	
	)	
Amendment of Part 15 Regarding New	)	ET Docket No. 04-37
Requirements and Measurement Guidelines for	)	
Access Broadband over Power Line Systems	)	

**THE REPLY COMMENT OF  
THE PENNSYLVANIA PUBLIC UTILITY COMMISSION**

The Pennsylvania Public Utility Commission (PaPUC) hereby respectfully submits this Reply Comment in response to the Federal Communication Commission's (FCC) Notice of Proposed Rulemaking regarding Broadband over Power Line Systems (BPL NOPR) released February 23, 2004.

**Summary of Reply Comment**

1. The PaPUC's Reply Comment makes several observations. These concern the (1) PaPUC's view of Broadband over Power Line Systems (BPL); (2) Scope and Applicability of the BPL NOPR; (3) the BPL Notice of Proposed Rulemaking (NOPR) definition of BPL; (4) Interference Mitigation and Prevention requirements; (5) Equipment Certification; (6) Public Notice; and (7) Residual Matters.

2. The PaPUC Reply Comment makes the following points on these issues:
- a. An ancillary BPL NOPR is necessary to address non-technical matters including, but not limited to, quality of service, universal service, and the role of the states;
  - b. The proposed BPL Access definition may be too narrow;
  - c. The final regulations adopted in this BPL NOPR should not apply for 36 months to entities already deploying BPL unless evidence shows that BPL matters cannot be resolved without application of the final regulations to these entities;
  - d. The radiated and conducted emission limits of Part 15 must apply to prevent any interference with critical licensed and unlicensed spectrum.
  - e. The FCC should divide the available spectrum into “notched” *i.e.*, automatically exempt or potentially exempt, and “non-notched” *i.e.*, automatically available, spectrum. Chart 1 lists (i) the notched *national spectrum* of Verizon, Sprint, Boeing Airlines (Airlines), American Radio Relay League, Inc. (ARRL), Central Station Alarm Association (CSAA), National Academy of Science Committee on Radio Frequencies (NAS-RAS), National Telecommunications & Information Administration (NTIA), and National Cable & Telecommunications Association (NCTA) where BPL should not be permitted and (ii) the notched *regional spectrum* where BPL could be allowed (service-territory/regional) so long as interference is mitigated and the spectrum is not heavily used. All non-notched spectrum should be available for BPL;

f. BPL service equipment should incorporate state-of-the-art power reduction, frequency modulation, and shut-off devices although shut-off devices should operate only as a last resort and providers must inform consumers of that possibility;

g. The Commission should create a BPL Task Force, modeled on the Internet Engineering Task Force, to address and resolve BPL engineering, equipment, and service issues;

h. An annual BPL Notice should be published in the Federal Register, the state's equivalent of the Federal Register, the largest newspaper of daily circulation in a BPL utility's territory, and once a year in a company's billing inserts;

i. A BPL Notice should be posted continually on the website of a BPL utility, a BPL service provider, a national database (preferably a revised version of the Universal Licensing System (ULS) database already maintained by the FCC), and the websites of those states that opt-in on BPL.

3. The PaPUC supports BPL generally because BPL is a forward-looking technology that could provide broadband access at just and reasonable rates to consumers throughout the country. The PaPUC shares the Commission and the President's view that BPL warrants regulatory support. In Pennsylvania, for example, one electric utility, Pennsylvania Power Light, Inc. (PPL), is far along in BPL efforts in its service territory using Main.net and Amerpion, Inc. equipment. PPL focuses on areas with minimal broadband access. Its willingness to resolve interference allegations is a useful model for the FCC's consideration.

## **Scope and Applicability of the BPL-NOPR**

4. The PaPUC urges the Commission to consider a limited exemption for 36 months from the final BPL regulations for companies that were already engaged in BPL efforts on the date of enactment of the final regulations. The PaPUC makes this recommendation to minimize any disruption in the plans and investments already underway by electric utilities such as PPL. The PaPUC suggests a limited exemption for 36 months and an accompanying provision stating that this limited exemption is revocable on a showing of credible evidence establishing that matters such as interference cannot be resolved unless the final regulations are applied.

5. The PaPUC also shares the view of the National Telecommunications and Cooperative Association (NTCA) and Cheyenne River Sioux Tribe Telephone Authority that the BPL NOPR must address issues much broader than spectrum allocation, interference, and public notice.

6. The PaPUC believes that an ancillary NOPR must address non-technical issues such as Quality of Service, Universal Service, the dedication of Power Line Carrier (PLC) spectrum in the 10-490 kHz range used by electric utilities for Power Line Carrier (PLC) and BPL, the states role, and Sections 255 and 244. The PaPUC suggests that the ancillary BPL NOPR seek comment on such issues including, but not limited to, (1) technology neutrality; (2) non-technical policy obligations such as quality of service and universal service; (3) the dedication of spectrum in the 10-490 kHz range used by electric utilities for Power Line Carrier (PLC) for BPL, (4) the states role, and (5) Sections 255 and 244. This failure to address such non-technical issues may further delay BPL.

7. The PaPUC believes that Part 15 radiated and conducted emission limits must apply to a BPL service provider. This approach establishes good precedent for subsequent examination of In-House BPL and addresses the concerns of Verizon, Sprint, Boeing, National Association of Shortwave Broadcasters (NASB), National Cable &

Telecommunications Association (NCTA), and the American Radio Relay League, Inc. (ARRL) that prior BPL deployments demonstrated spectrum interference. However, interference should not prohibit BPL efforts. Rather, the PaPUC believes that temporary national or service-territory/regional notching addresses this concern pending the development of a final solution by the BPL Task Force.

### **NOPR's Definition of BPL**

8. Paragraph 32 in the BPL-NOPR limits the definition of Access Broadband over Power Line (Access BPL) to an electric service provider.

9. The PaPUC urges the Commission to insert the phrase “or any other BPL service provider” at the end of the sentence to include BPL service providers that are not electric utilities as discussed in Paragraph 10 below.

10. The PaPUC believes that the viability and appeal of BPL service is such that entities other than an electric service provider, perhaps a tenant or joint venture of an electric service provider not otherwise a subsidiary of an electric service provider, will be drawn into the market. As the market encourages BPL, the FCC's definition must be expansive enough to require essential technical requirements if BPL is to succeed regardless of an electric service provider's corporate structure. Otherwise, the Commission may be unable to ensure that other carriers meet the critical technical requirements needed for BPL service.

### **BPL Interference Mitigation and Prevention Requirements**

11. In paragraphs 33 through 38 of the BPL NOPR, the Commission proposes to require only compliance with Part 15's radiated emission standard but to exempt BPL

from conducted emission limits. In addition, in Paragraphs 38 and 42, the Commission proposes to require BPL service provider equipment to contain frequency modulation technologies, a shut-off feature, and power-reduction capabilities. In addition, the NOPR does not expressly notch any licensed or unlicensed spectrum, currently allocated to other parties that filed a Comment in this proceeding, from BPL service.

12. The PaPUC supports an obligation of frequency modulation, shut-off, and power reduction but believes such interference mitigation measures must extend to radiated and conducted emissions.

13. The PaPUC urges the Commission to insert an additional paragraph (g) in Section 15.109. Section 15.109(g) should require incorporation of state-of-the-art frequency modulation technology including, but not limited to, Orthogonal Division Multiplexing (ODFM), Direct Sequence Spread Spectrum (DSSS), or comparable technology using a Declaration of Conformity (DoC).

14. The PaPUC also urges the Commission to insert an additional paragraph (h) in Section 15.109. Section 15.109(h) should require a state-of-the-art shut-off feature used only as a matter of last resort. A consumer must be given information about that possibility.

15. The PaPUC urges the Commission to create a National BPL Task Force (BPL Task Force) modeled on the Internet Engineering Task Force. The BPL Task Force should propose consensus solutions on frequency modulation, shut-off, power reduction features, and other measures required to promote BPL. The PaPUC believes that interested stakeholders and interested parties acting together will better address and resolve BPL matters compared to regulators alone.

16. The PaPUC further urges the Commission to divide the available spectrum into “notched” *i.e.*, automatically or possibly exempt, and “non-notched” *i.e.*, automatically allowable spectrum, for BPL. Chart 1 lists the Verizon, Sprint, Airlines,

ARRL, CSAA, NAS-RAS, NTIA, and NCTA spectrum where BPL should not be permitted (national), where BPL could be allowed (service-territory/regional) so long as interference is mitigated and the spectrum is not heavily used, and where BPL should be automatically permitted (all non-notched spectrum). This approach mitigates interference and reduces the potential for litigation by disgruntled parties. The resulting division, however, must not continue in perpetuity. The PaPUC urges the FCC to create a BPL Task Force to propose way to use notched and non-notched spectrum for BPL as well as the feasibility of dedicating BPL to the 10-490 kHz spectrum, which utilities already use to operate their PLC systems.

### **Equipment Certification**

17. The Commission proposes to certify equipment using the Commission's least-restrictive certification.

18. The PaPUC believes that this nascent service and the considerable uncertainty surrounding BPL warrants application of Part 15 limits at this time for radiated and conducted emissions using a Declaration of Conformity (DoC) process. DoC verification, which is identical to the least-restrictive verification process except that a manufacturer must use an accredited laboratory to certify, provides more certainty than the least restrictive verification process. Moreover, resort to the least restrictive verification process at this time may exacerbate interference, given the technical uncertainties, and thereby result in imposition of the most restrictive certification process.

### **Public Notice**

19. The Commission proposes to require a form of public notice for parties about BPL (BPL Notice).

20. The PaPUC believes that an effective BPL Notice must allow an interested party to quickly identify and contact persons and institutions about BPL matters.

21. The PaPUC suggests that the BPL Notice list: (1) the general range of frequencies allowed for BPL service on a nationwide and service territory/regional basis; (2) advise the public that BPL might cause interference notwithstanding modulation, power reduction, and shut-down technologies; (3) list a contact person and toll free number responsible for BPL matters at every BPL utility and BPL service provider; (4) inform the public of their right to file a complaint at the FCC about BPL matters; (5) list the name and phone number of the appropriate FCC department charged with BPL information and enforcement; (6) advise the public that state commissions may initially address these matters and, for those that do, (7) list the state commission person and number responsible for BPL information and enforcement matters.

22. The PaPUC encourages the Commission to adopt a BPL Notice requirement consisting of the following minimal requirements. First, the BPL Notice must be published annually in the Federal Register, the state's equivalent of the Federal Register, the largest newspaper of daily circulation in a BPL utility's service territory, and in a company's billing insert once a year. Second, the BPL Notice must be posted continually on the websites of a BPL utility, a BPL service provider, and a nationwide database (preferably a revised version of the Universal Licensing System (ULS) database maintained by the FCC), and the website of the states that opt-in on BPL.

### **Residual Matters**

23. The PaPUC notes that the BPL NOPR does not address the role of the states in BPL matters nor does it address non-technical issues.



24. The PaPUC urges the Commission to grant states the option of participating in BPL matters by filing a statement within 30 days of issuance of the final regulations conditioned, of course, on the fact that the FCC is the ultimate arbiter of interstate BPL.

25. The PaPUC also notes that the BPL NOPR does not include any timeline for effectively resolving interference allegations and urges the Commission to establish clear timelines to resolve these types of matters.

26. The PaPUC suggests a sliding-scale timeline based on the frequency in question and the current use of that frequency. The BPL Task Force can address this question because there is not enough record evidence to make a final recommendation.

27. The PaPUC further notes the Sprint-ARRL suggestion that emission measurements at electric utility poles are appropriate and that no emission should exceed 100 microvolts measured at a distance of 3 meters.

28. The PaPUC believes this suggestion warrants serious consideration. The BPL Task Force should address this question given the absence of substantial scientific and technical support in the BPL NOPR.

29. The PaPUC notes, in addition, that utilities are already using the 10-490 kHz frequency for the critical Power Line Carrier (PLC) operations to ensure reliability and operation of their electrical system.

30. The PaPUC recognizes that dedication of this portion of the spectrum for PLC and BPL operations may be appropriate. The BPL Task Force should address this issue given the lack of development on that possibility in this record.

The PaPUC thanks the Commission for providing this opportunity to file a Reply Comment in this matter.

Respectfully submitted,  
Pennsylvania Public Utility Commission

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**CHART 1**  
**PaPUC Proposed “Notched” Spectrum**  
**in 1.7 – 80 MHz Range**

<b>Verizon</b>	National	25-138 Khz
		3.75 – 5.2 MHz
		8.5 – 12 MHz
		28 Khz – 1.1 MHz
		1.6 – 3.75 MHz
		5.2 – 8.5 MHz
<b>Airlines (Boeing)</b>	National	3 MHz in 2-30 MHz i.e., 42 Khz in total
<b>ARRL</b>	Service Territory	1.8 – 2.0 MHz
		3.5, 5, 7, 10, 14, 18, 21, 24, 28 MHz
<b>CSAA</b>	Service Territory	450 – 470 MHz
<b>NAS/RAS</b>	National	13.36 – 14.41 MHz
		25.55 – 25.67 MHz
		37.50 – 38.0 MHz
		38.0 – 38.25 MHz
		73.0 – 74.60 MHz
		406.1 – 410.0 MHz
		608 – 614 MHz (ITU mandated)

<b>NCTA</b>	National	Broadcast in 1.7 to 80 MHz 54 – 72 MHz 76 – 78 MHz
<b>NTIA</b>	National	41 Frequencies (serving 59,000 federal allocations)

